New England Deaconess Hospital

pulse

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NEDH provides comprehensive care for people with diabetes-related renal failure

Hemodialysis Assistant Julie Hirtle takes the blood pressure of Thomas Murphy as he undergoes dialysis treatment.

Less than ten years ago, the outlook was bleak for people with renal (kidney) failure. Until 1973, expensive, life-saving dialysis treatment was not available to the majority of such patients. At that time, the federal government agreed to reimburse social security participants for nearly the full cost of their dialysis treatments.

The resulting expansion of dialysis services was especially vital for a subgroup of these patients — people with diabetes-related renal failure whose condition further complicated the delicate therapeutic process.

Prior to 1973, these people rarely received dialysis services. Today, they are among the 70,000 Americans who depend upon dialysis to survive. The Deaconess currently cares for more than 150 dialysis and 40 renal transplant patients a year. Of these, about 80% of the dialysis patients and 50% of the transplant patients have diabetes.

The following article, the first of a three-part series on NEDH renal services, will examine the complex problems encountered by people with diabetes-related renal failure, and explain how the Deaconess Hospital helps them to control their medical difficulties within the framework of their everyday personal, work and family lives.

* * *

"How many vital organ systems can fail and be adequately replaced? Not many," said Dr. David C. Yoburn, NEDH and Joslin Diabetes Center (JDC) nephrologist, a specialist who deals with the medical aspects of renal disease. "But kidneys can be successfully transplanted, and if that doesn't work, dialysis machines (artificial kidneys) can perform the organs' function mechanically," he pointed out.

The kidneys, two small organs located deep in the abdomen, clear waste materials and excess fluids from the body while regulating its blood pressure and internal chemistry. Without such a filtering system, a person soon would die from a chemical imbalance caused by an accumulation of poisonous materials and impurities. Dialysis does not supply the hormones that kidneys normally would produce, nor does it filter the blood as well or as continuously, but artificial kidneys are essential for survival.

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Radiation therapy staff combines technology with personalized patient care

Mary Jane Row came to the NEDH Radiation Therapy Department angry and scared. Angry that her breast cancer had recurred, just before the start of a new job. Scared because she did not know what to expect.

Nine weeks later, when Row had her last radiation treatment, she felt she was leaving friends.

"Your whole life is upset, torn apart," said Row, who already had undergone two mastectomies (removal of the breast) and was receiving chemotherapy. "Everyone at the Deaconess — from doctors to secretaries — cares and is willing to help you through the treatment.

"Besides the excellent medical care, my doctor and I decided I should come to the Deaconess because the atmosphere here is more personalized," said Row. "I am an individual. To be lost in a mass of people is horrible," she explained. "Deaconess does not have a clinical atmosphere. The nurses know my case and who I am. The technicians call me by my first name," she noted.

Row's first day at radiation therapy was not for actual treatment. It was a time for reviewing her records and meeting the staff. This was the point at which Mary Schade, RN, head radiotherapy nurse, assessed Row's family situation, history of medications and any need for additional emotional or physical support.

"I felt uncomfortable and strange at first," Row recalled. "Mary sat me down and talked to me about what was going to happen. She became my contact."

Schade is one of three radiotherapy nurses who work in the Deaconess radiation therapy department. The department is a treatment unit of the Joint Center for Radiation Therapy, or JCRT (see accompanying feature story). Schade began working with the JCRT 13 years ago.

"When patients first come here," said Schade, "they are seeking help desperately. We try to make sure the patient gets *total* care and not just

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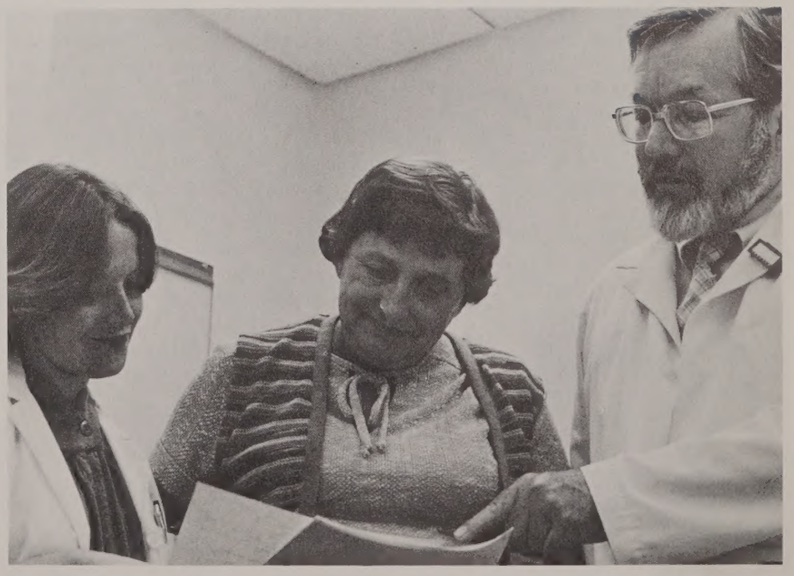


Debra Columbare (l), radiotherapy nurse, and Dr. John T. Chaffey, chief of Deaconess radiation therapy department, answer Mary Jane Row's questions concerning her radiation treatment plan.

"Every aspect of my care was covered by a member of the

Renal *(continued from page 1)*

Five NEDH/JDC nephrologists, including Dr. John D'Elia, chief of the nephrology section at NEDH, provide medical supervision for the hemodialysis, peritoneal dialysis, hometraining and renal cluster units at the Deaconess. All units are staffed by NEDH nursing and support services personnel. In addition, two JDC renal nurse specialists play a major role in the early stages of care of patients with diabetes-related renal failure. Because of NEDH's association with Joslin, renal failure often is detected and treated as early as possible in many people who have *diabetes mellitus.* (All italicized words are defined in a glossary on page 3).

How diabetes affects the kidneys

Certain renal diseases, or other diseases which affect the vascular system, can damage the kidney's small blood vessels and more than two million delicate filters. A disease such as diabetes can destroy these structures. Diabetic nephropathy encompasses three changes: sclerosis (hardening of small renal arteries); damage to the renal blood vessels and filtering part of the kidney; scarring of the kidney's substance.

An estimated 25% of all people with diabetes will have some level of renal disease, although not all will experience complete failure (referred to as "end-stage renal disease"). People who require insulin to manage their diabetes, or those whose diabetes is not under good control, are more likely to develop kidney impairment.

First detection of renal disease is found in blood and urine tests, a routine examination procedure for people with diabetes. "Managing diabetes doesn't necessarily interfere with treatment for renal failure," Dr. Yoburn explained. "It does mean that most patients must take up to 10-15 medications a day to control two diseases."

Patient Education

Dr. Yoburn is convinced that the reason so many people with very complicated, diabetes-related renal failure do well at NEDH is because they are thoroughly educated concerning their medical condition. Research indicates that maintaining strict blood sugar control is crucial in delaying and minimizing the effects of renal damage. "People who are purposefully keeping their sugar levels up higher, because it temporarily makes them feel better, could be causing cumulative injury to their eyes, kidneys and heart — injury which doesn't show up for years," said Dr. Yoburn. "Once the kidneys are damaged, you cannot reverse the situation, only slow the progression. With the use of home monitoring devices, our patients have been able to maintain excellent blood sugar levels," he continued. "We won't know for years exactly how beneficial aggressive blood sugar control is, but current evidence suggests that it does slow the progression of these diabetic complications," Dr. Yoburn concluded.

Marsha Solomon (not her real name) knew her diabetes had been out of control for some time when she entered the NEDH Diabetes Treatment Unit (DTU) nearly three years ago. The 46-year-old woman had come reluctantly to the DTU to obtain help in controlling her diabetes and high blood pressure. "I have had diabetes for 18 years, and I am a nurse on top of it, so I was aware of the medical complications associated with diabetes. I just wanted to deny the fact that something was wrong," Solomon commented.

"They laid it on the line to me in the DTU — I had renal failure and would need dialysis in six months. I took it hard," remembered Solomon. She had immediate minor surgery to implant a *fistula* in her arm to serve as a permanent access site for hemodialysis treatment. NEDH nurses from the hemodialysis unit explained the process to her and eased her into the "routine."

"I talked with a social worker to arrange the financial aspects of dialysis treatment, received a new diet from the renal dietitian specialist and discussed some of my personal concerns with a hospital chaplain," Solomon said. "Every aspect of my care was covered by a member of the Deaconess renal team. They helped me and my family adjust to the traumatic change in our lives," she recalled.

The education process for NEDH/JDC patients with diabetes-related renal disease is a thorough and individually tailored plan organized by members of the NEDH renal team. They represent every service connected with a patient's care, including social services, pastoral care, nursing, psychiatry, clinical dietetics and physical therapy. With such careful preparation, according to Dr. Yoburn, there are no surprises for people by the time they are ready to begin dialysis. "I have been told by patients that they keep waiting for something unexpected to happen, but that it turns out just like everyone said it would," he observed.

Dialysis Treatment

A major part of the patients' adjustment to renal failure involves learning to fit the dialysis schedule into their regular personal routines. Hemodialysis, which was more appropriate

(continued on next page)

What happens when kidneys fail?

Renal disease can be caused by a variety of factors, including infection, blood circulatory disorders, and blockages or abnormalities of the kidney tissues or urinary tract. These conditions can often be treated by dietary adjustments, medication and surgery.

Uremia (meaning "urine in the blood") occurs when waste products build up in the body, indicating that the kidneys are diseased or damaged and no longer can function. Acute (short-term) or chronic (permanent) renal failure requires immediate dialysis treatment to remove waste materials from the body. In the case of acute failure, temporary dialysis gives the damaged kidneys a chance to recover and resume their function. Chronic failure, however, is irreversible.

Dialysis does not supply the hormones that kidneys normally would produce, nor does it filter the blood as well or as continuously, but artificial kidneys are essential for survival.

Deaconess renal dietitian specialist Susan Levine, RD, dishes out salad prepared by Rafael Armando Pons (r), owner of the "Hermitage" restaurant, at a cooking workshop for individuals with renal failure.

Workshop presents gourmet meal ideas for those following renal/diabetic diets

Adherence to a restricted diet can mean the difference between life and death for individuals with renal (kidney) failure, but creating palatable meals can be exasperating when faced with strict limitations of potassium, sodium, phosphorous, fluid, protein and calories. This problem was addressed recently at an innovative cooking workshop for people with diabetes-related renal failure, sponsored by the New England Deaconess Hospital and the Joslin Diabetes Center. Diabetes is a leading cause of permanent renal failure.

Rafael Armando Pons, proprietor of the "Hermitage" restaurant in Boston's Back Bay, used his culinary imagination to create gourmet meals within the renal diet. Using kitchen facilities at Simmons College's nutrition department, Pons prepared a 500-calorie luncheon of vermouth consumme, salad, breast of chicken stroganoff and rice pilaf.

Renal failure is a lifetime condition, thus, education about diet restrictions is essential to the medical care of renal patients. Deaconess patients are counselled by clinical dietitians, who help patients and their families integrate the special renal diet into their daily meals. Patients who have renal failure come to the Deaconess three times a week for an average of four to eight hours each time to receive dialysis, a process that removes waste and poisons from the blood using an artificial kidney machine.

"Patients on dialysis are so restricted," said Susan Levine, RD, Deaconess renal dietitian specialist. "Taking away food is like a final blow. Giving it back is a real morale booster."

Pons' cooking lesson was supplemented by presentations from: Levine; nutritionist Beverly Halford and renal nurse specialist Linda Hampton, both of Joslin; and Bonnie Vincent, Cambridge Center for Adult Education, who discussed growing spice plants and herbs in one's home. The workshop was hosted by Antoine Kaldany, MD, renal specialist at NEDH and Joslin.

Deaconess renal team . . ."

for Marsha Solomon since she had a weight problem and smoked, is done 2 to 3 times per week for 3 to 4 hours each session. In the Deaconess hemodialysis unit, headed by Diane Paine, RN, nurses help patients establish a schedule which will disturb their family and personal lives as little as possible.

"We encourage our patients to keep working," said Paine. "That's our number one goal right now. It's important for them to maintain their independence. If they feel they are totally dependent on a dialysis machine, they may start showing dependence in other ways," Paine noted.

Marsha Solomon agreed that her best therapy was her job. "I did not want to sit at home dwelling on my problems," she explained. "Even though combining work and dialysis was difficult and exhausting at times, I was supported by my colleagues and by the Deaconess renal team.

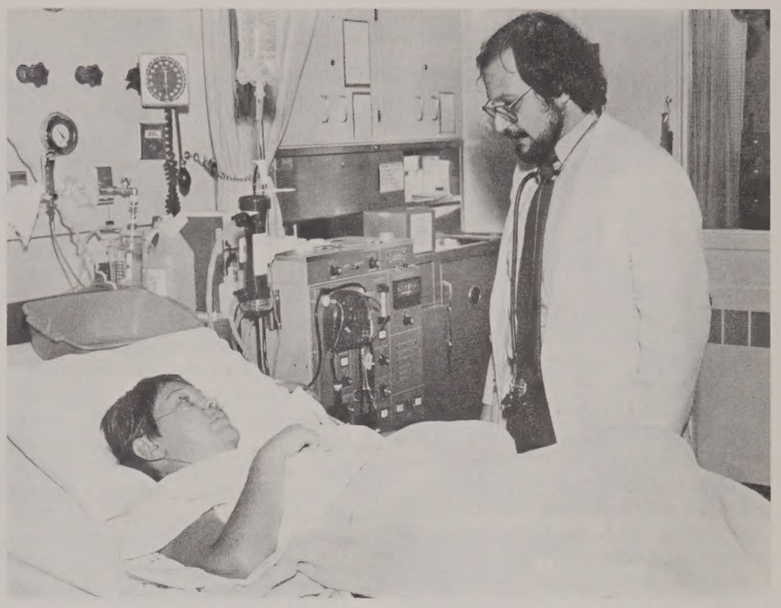
Adapting to hemodialysis can be difficult. During the procedure, blood is pumped continuously into a machine which removes the impurities and returns the cleansed blood to the patient. Hemodialysis removes toxins from the body quickly, sometimes resulting in nausea for the patient. Normal kidneys work 24 hours-a-day, every day, so it is a shock to the system when an artificial kidney performs for an average of only 12 hours each week.

Peritoneal dialysis has proven to be more tolerable for many people with renal failure. Peritoneal dialysis (PD) involves the flushing of a special solution through a cavity between the layers of the tissue (peritoneum) which covers the abdominal contents.

"Insulin can be placed in the solution," explained Dr. Yoburn. "By injecting it into the abdomen, it is first processed through the liver and circulated more normally through the body. We find that many people do feel better with PD," he said.

Over the past two years, a process called CAPD (continuous ambulatory peritoneal dialysis) has been a popular choice for people who have chosen to become "hometrained" for dialysis. CAPD must be done four times daily by pouring a solution into the abdominal cavity via a *catheter*, then, 4 to 8 hours later, draining out the solution which carries the waste products. (The NEDH hometraining program will be covered in the next issue of PULSE.)

Regular PD is done three-times-a-week for ten hours each session. Many patients who have jobs or daytime commitments choose to dialyze in the hospital at night, being charged only for the treatment itself. June Lee, RN, supervises the unit which, as with the other NEDH renal service components, emphasizes education.



Dr. David C. Yoburn, renal specialist, visits Sandra Pandolfo in the hemodialysis unit.

"All patients receive a tour of the unit and an explanation of dialysis limitations and how the treatment will affect their lifestyles," said Lee. "We try to anticipate problems. Sometimes, the problems come in the form of 'reality shock' when these patients see how much time actually needs to be given to dialysis," Lee continued. "Patients often are unaware of the effect dialysis can have on their families and lifestyles. We're responsible for making the transition less stressful for them," she added.

The renal team's individual approach is appreciated by the people for whom they care. "They realize the number renal failure can do on your life," said Marsha Solomon. "One day at work, I received a call from a Deaconess nurse who wanted to know how I was doing. I hadn't called her first, she just happened to think of me," Solomon recalled. "Knowing that I was important to each of them pulled me through. I wouldn't have done as well as I did without their help and consideration."

'We're responsible for making the transition to dialysis less stressful for all concerned'

June Lee, RN

Next issue of PULSE: NEDH dialysis services, including a safe and cost-effective home training program

GLOSSARY

Catheter: A tube which is inserted into a narrow body opening so that fluids can be introduced or removed.

Diabetes Mellitus: A disorder of the body's metabolism, involving insufficient production of insulin (a hormone) by the pancreas. As a result, sugars and starches are not properly processsed by the body. Instead, the body breaks down fat and muscle to use as a substitute energy source. The sugars and starches accumulate in the blood, causing a person to feel weak, lose weight, and to urinate, drink and eat excessively. Diabetes can cause a variety of disorders, including nerve and blood vessel damage. Diabetes cannot be cured, but it is manageable through dietary control, medication and/or insulin injections.

Fistula: In hemodialysis treatment, a fistula is a surgical connection which joins an artery and a vein beneath the skin's surface. A needle is inserted through the healed tissue to initiate the dialysis process.

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Hepatitis B vaccine offered to high-risk employees

Beginning in October, the Deaconess is offering the recently licensed hepatitis B vaccine to employees determined to be at greatest risk for contracting hepatitis B virus (HBV) infection. The employees have been contacted by the hospital infection committee.

Numerous studies on hepatitis B exposure and infection have shown that certain hospital personnel are at a two to six times greater risk of acquiring HBV infection than is the general population. The most common means of transmission of HBV is blood contact; thus, those employees who frequently come in contact with blood or blood components have been targeted to receive the vaccine.

Hepatitis B is an infection caused by a virus that results in inflammation of the liver. Most people with hepatitis B recover completely, but approximately five to ten percent become chronic (permanent) carriers of the virus without experiencing symptoms, and can transmit the disease to others. These carriers later may develop chronic active hepatitis, which can lead to cirrhosis (scarring of the liver that leads to abnormal liver function) and/or liver cancer. HBV causes death in approximately one to two percent of patients. Immunization against hepatitis B, therefore, can prevent acute hepatitis and reduce sickness and death from chronic active hepatitis, cirrhosis and liver cancer.

After extensive testing for safety and efficacy in both animal and human trials, the HBV vaccine was licensed in June 1982, and became available for use this fall. NEDH Epidemiologist Richard Platt, MD, recently concluded a clinical study of the use of hepatitis B vaccine with high-risk employees. Studies show that healthy people who received two doses of vaccine and a booster achieved high levels of surface antibody (substance produced by the body's immune system to fight infection) and protection against HBV. Full immunization requires three doses of vaccine over a six-month period, although some persons may not develop immunity after three doses. People who have been infected with HBV prior to receiving the vaccine may develop hepatitis in spite of immunization. The duration of immunity is unknown at this time.

No serious side effects have been reported with the vaccine, but a few persons may experience tenderness and redness at the site of injection, or low-grade fever. Other minor effects, such as rash, nausea, joint pain and mild fatigue, also have been reported.

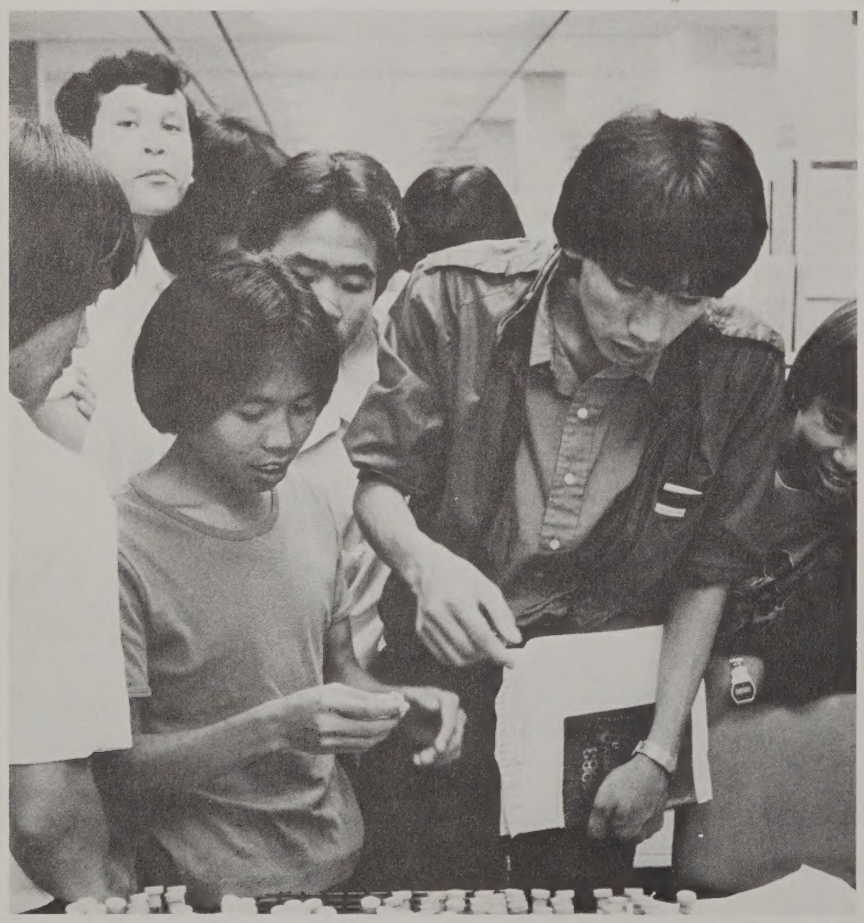
Students graduate from pastoral care program

Graduates of the NEDH Clinical Pastoral Education Program gathered for a final photograph after eleven weeks of in-service training that acquainted them with the Deaconess community and helped them develop pastoral care methods for patients and families coping with the stress of hospitalization. Accredited by the Association for Clinical Pastoral Education, the eight-year-old program is attended by students from across the United States. This year's eleven graduates are: (front row, l-r) Noella Langlois; Helen Siggers (Deaconess pastoral care office coordinator); Joy Barrett; James Willems; Kathleen Mandeville; the Rev. F. William Schuster (associate director, Deaconess pastoral care department); Judy Helm, (back row, l-r) the Rev. Raymond Anderson, (Deaconess staff chaplain); Kim Clements, Deaconess resident chaplain; Terry DeForest; Rebecca Hartshorn; Dale South; Ann Duffy; the Rev. Guy Steele (director, Deaconess pastoral care department).

Memorial to Dr. Menkes presented

A tapestry was dedicated to the memory of Dr. Elias Menkes, former codirector of the intensive care unit, during a recent ceremony attended by family, friends and colleagues. Guests included (photo, l-r): Dr. George L. Blackburn, intensive care unit director; Dr. Menkes' children, Vanessa and Sarah, and his wife, Aliana Brodmann-Menkes. Mrs. Menkes made the tapestry, which is taken from a 17th-century Flemish design. The tapestry, and a plaque commemorating the gift are located in the intensive care unit lounge on Farr 6. The dedication program included remarks by President Laurens MacLure, Dr. Blackburn and Reverend Guy L. Steele, pastoral care department director.

NEDH hosts Asian students



Xai Ynag (above photo, right) interprets information about the NEDH Hematology Laboratory to participants in the Asian Newcomer Youth Program, an educational and recreational summer program for Laotians and Cambodians between the ages of 14-21 years who have been in the United States for less than 18 months.

NEDH Volunteer Services Director Phyllis Wasserman escorted the group and their teacher, Ann McAuliffe-O'Donnell, on a tour through the hospital as part of the program's vocational information service. NEDH personnel staff described entry-level job opportunities at the hospital, followed by a visit to the clinical dietetics/food service, laundry, diagnostic radiology and hematology departments. According to McAuliffe-O'Donnell, the program places emphasis on entry-level job opportunities because they are the best vocational possibilities for the youths while they learn English and obtain more education.

NEDH contributes to Mission Hill Fair

Mission Hill residents met members of the Deaconess community recently when they visited the hospital's exhibit at the Fourth Annual Mission Hill Fair on September 11. NEDH volunteers spent the day measuring visitors' sugar levels for diabetes, taking blood pressures, typing blood and providing job information, all for free. Literature on nutrition and on the School of Nursing also were distributed at the booth.

This was the third year that the Deaconess participated in the fair, which is supported by 100 local community groups and educational and health care institutions. In addition to the hospital's exhibit, NEDH contributed financially to the fair's operation. All proceeds from the event go to insure continuation of the community's transportation system, the Mission Link Bus.

Staff members representing the Deaconess at the fair were: Helen Burton, RN, and Shelly George, RN, NEDH Diabetes Treatment Unit (DTU); Marti Hopkins, RN, DTU-Brookline; Ellen Leary, RN, cardiac clinical nurse specialist; Maureen Shalala and Diane Rodes, blood bank; Julie White, RN, nurse epidemiologist; and Susan Allen and Cathy Gillis, personnel.

Maintenance and engineering staff contributed a 6′ by 8′ backdrop, designed and constructed by the department.

Diane Rodes, blood bank, determines blood type for a Mission Hill mother as her children watch.

Marti Hopkins, RN, (l), diabetes treatment unit (DTU) at Brookline, and Helen Burton, RN, Deaconess DTU, measure the sugar level of a Mission Hill resident.

Ellen Leary, RN, cardiac clinical nurse specialist explains to a young visitor why it is important to have your blood pressure taken.

Employees host open house at new 99 Brookline offices

New, renovated offices for approximately 60 Deaconess employees were previewed a recent open house at 99 Brookline Avenue, located within ten minutes commuting distance from the hospital.

Over 200 Deaconess employees visited the open house to enjoy refreshments with their colleagues, and to tour the facilities which house the accounting, purchasing and physician and ambulatory patient financial service departments.

Employees from these departments organized the event, which included informative tours of each division. "Besides presenting an introduction to new Deaconess facilities, we wanted to give people a better understanding of how each department operates," explained Peter Mazza, accounting. Mazza planned the open house with Gail Graham, administration, Lorraine Rabino, physician and ambulatory patient financial service, and Linda Warren, purchasing.

Mazza thought that Deaconess employees were impressed with the office space, "especially if they were familiar with our old facilities which were crowded, rather noisy and lacked privacy," said Mazza.

The Brookline Avenue offices, located in the Red Cross Building outside of Kenmore Square, were renovated this past spring with a great deal of assistance from the NEDH Maintenance and Engineering Department.

Gail Graham, who headed the renovation project, explained that, "we wanted to have an open house not only to acquaint all employees with the facilities, but to thank the many people who contributed to completing the area on schedule, and to maintaining constant communication between the central hospital and the off-site offices."

Deaconess employees who organized the open house were: (l-r) Lorraine Rabino, physician and ambulatory patient financial service; Linda Warren, purchasing; Peter Mazza, accounting; Gail Graham, administration.

Pamela Gill (l) and Mary Freedman, food service department, prepare refreshments for guests during an open house held at the 99 Brookline Avenue office building.

The Deaconess is a leader in developing new radiotherapy

Radiotherapy *(continued from page 1)*

radiation treatment," she added.

After the nursing assessment, Row met with her doctors, including Dr. John T. Chaffey, chief of the NEDH Radiation Therapy Department. Radiotherapy nurses are present at all initial physician visits and consult closely with the doctors. Since their offices are located within a few steps of the nursing stations and treatment rooms, the physicians are particularly accessible.

"We try to spend at least an hour with each patient on an initial visit," explained Dr. Chaffey. "This time is not spent only in evaluating patients medically, but in preparing them emotionally for what they will go through and in establishing a rapport so they are more receptive to treatment."

Major Cancer Therapy

Radiation therapy (or radiotherapy) is a highly technical form of treatment that has become a major force in cancer therapy over the past 20 years. Most radiotherapy treatments utilize high energy x-rays produced by linear accelerators and directed to a tumor and surrounding tissues to stop cancer cells from growing and multiplying. Linear accelerators are machines similar to x-ray machines, but they produce higher energies that are beamed to specific areas of the body.

If radiation is given just as cancer cells are about to divide, the radiation will prevent the cell from reproducing and it will die. Since cancer cells grow rapidly, more of them are in the process of dividing and are more susceptible to radiation than are normal cells.

Often, radiation therapy is used in palliative (temporary pain relief) treatment for patients with cancer that has spread to other parts of the body and is incurable.

Radiation also can be administered internally with an implant of radioactive material that is placed surgically next to the tumor and is removed after a few days when the patient can resume normal activity.

The goal of radiation therapy is to destroy tumor cells, while preserving as much surrounding, normal tissue as possible. The amount of radiation a patient will receive is determined by the type of cancer, the area of the body being treated, the size of the tumor, the tumor growth rate and pattern of spread in the body, and the radiation tolerance of normal tissues adjacent to the tumor.

Complementary Treatment

Radiation therapy can be used alone or in combination with surgery and chemotherapy (drug treatment). Radiation therapy, like surgery, treats localized cancer, or cancer that has not spread to other parts of the body. The therapy differs from surgery because it can treat larger volumes, or areas, and still preserve normal tissue.

Radiation therapy can complement surgery, because it can treat surrounding tissue after an operation, which sometimes means less extensive surgical procedures, or it can be used to shrink a tumor before surgery.

Although several cancers may be treated by either radiation or surgery with comparable results, many factors must be considered by a patient when making a choice: availability of experienced personnel; modern equipment; functional results (laryngeal cancer, for example, treated by radiation rather than surgery preserves an essentially normal voice); cosmetic results.

In some cases, radiation is used in combination with chemotherapy, as in

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Deaconess makes vital contributions as member of innovative center for radiation treatment

The NEDH Radiation Therapy Department is one of three treatment centers of the Joint Center for Radiation Therapy (JCRT). The JCRT was organized in 1968, under the auspices of the Harvard Medical School, to provide modern, comprehensive radiation therapy facilities for its affiliated hospitals in the Longwood Avenue medical area, including NEDH, Brigham and Women's Hospital, Beth Israel Hospital, Sidney Farber Cancer Institute, Children's Hospital Medical Center and the Faulkner Hospital in Jamaica Plain (associate member).

The JCRT, which has its administrative headquarters in the Shields Warren Radiation Laboratory, also serves patients through treatment centers at Brigham and Women's Hospital and Beth Israel Hospital, and a treatment planning center at the Sidney Farber Cancer Institute.

In addition to radiation planning and treatment, the JCRT trains physicians in a four-year residency program in radiation therapy, conducts a training program for radiation technologists, cooperates with the Harvard School of Public Health to train radiological physicists, and conducts research on various aspects of cancer therapy, cellular biology and radiation physics.

Hodgkin's Disease

The JCRT treated 2,604 patients in 1980-81, with 40 percent of those patients treated at the NEDH Radiation Therapy Department, largest of the JCRT-affiliated units. The JCRT has become a major referral center for the treatment of breast cancer and Hodgkin's disease (cancer of the lymph system, a division of the circulatory system, consisting of a network of vessels that carry lymph — a fluid that bathes the cells — from body tissues back to the blood stream).

"One of the most dramatic stories about radiation therapy has been its effect on Hodgkin's disease," said Dr. John T. Chaffey, chief of the NEDH Radiation Therapy Department. "Hodgkin's disease was almost a totally fatal cancer until 25 years ago, but with radiation treatments, we began to see a 50-70 percent survival rate five years after treatment. Now, with combined chemotherapy treatment, survival has further increased to approximately 80-90 percent five years after treatment," he explained.

Breast Cancer Treatment

Another area of great interest at JCRT, according to Dr. Chaffey, has been breast cancer treatment without mastectomy. Traditionally, radical mastectomies (removal of the breast, chest muscles, lymph nodes and underlying fat), and more recently, modified radical mastectomies (leaves muscles intact to preserve contour of chest wall) have been the accepted treatment for breast cancer; but, that is changing. More and more, women with localized breast cancer (that which has not spread to other parts of the body) are opting for segmental mastectomy, or lumpectomy, which removes only the tumor and a wedge of normal tissue, followed by radiotherapy after the surgery.

This procedure preserves the breast, which can be a psychologically and cosmetically desirable outcome for many patients. Patient survival rates so far have been comparable to those with more radical surgery. The JCRT has treated more than 650 cancer patients without mastectomy since 1968, and will treat another 200 such patients this year. According to Dr. Chaffey, Dr. Jay Harris, NEDH radiation therapist and JCRT Deputy Director, has spearheaded this effort so successfully that a national trend toward breast preservation in breast cancer treatment is developing.

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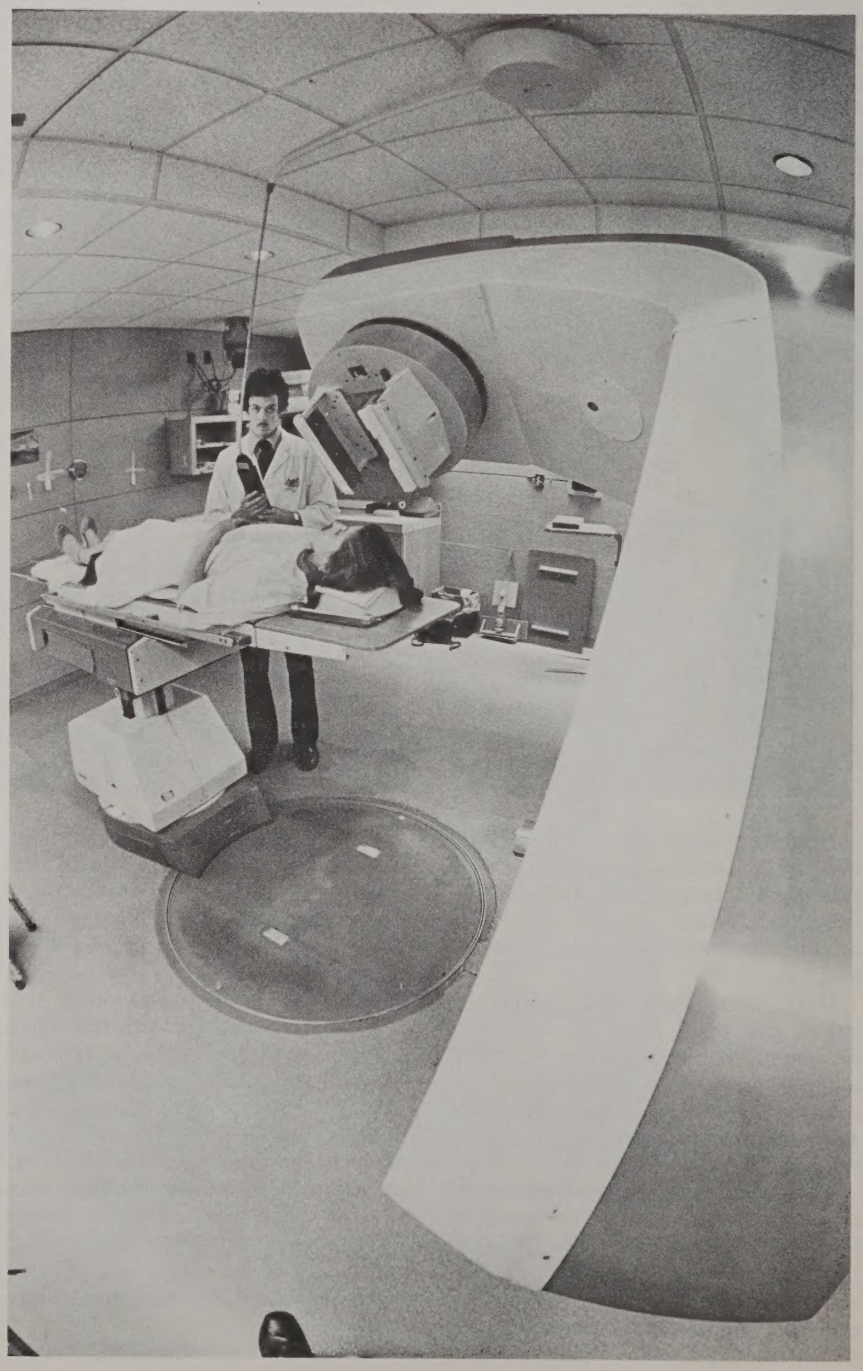


for cancer treatment

Mary Jane Row's situation. Chemotherapeutic drugs travel throughout the body, destroying cancer cells but, according to Dr. Chaffey, may not be as effective as radiation in killing specific solid tumors.

Complex technology

The complex technology and sophisticated machinery involved in radiotherapy provides flexibility of treatment and enables therapy to be tailored to specific requirements of individual patients. It also requires a great variety of specialists working together to compute and design a therapy program that is the most beneficial to the patient.

"The days of individual physicians providing all aspects of a patient's total care are gone," commented Dr. T.J. Fitzgerald, NEDH radiotherapy fellow while explaining the planning procedures. "We consult with surgeons, radiation technicians, physicists, dosimetrists (computes radiation dosages) and nurses," he said.

The actual treatment of a patient takes 10-20 minutes for each visit. The initial planning for that treatment, however, may take several days, with all the combined expertise of all the people mentioned above being brought to bear on the individual's needs.

Planning for Row's therapy, as for all JCRT patients, was conducted at the JCRT's treatment planning center at the Sidney Farber Cancer Institute (SFCI). After Row's initial visit, she was given an appointment at SFCI. A CT scan (computerized axial tomography — x-rays used for examining soft tissues by means of a computer that produces cross-sectional images) had given the doctors a good picture of the size, shape and placement of the tumor in her body.

Row was placed on a simulator — a machine that is similar to the therapy machine and capable of reproducing the geometric boundaries of the actual therapy. JCRT technicians, consulting with the doctors, took x-ray films to determine the depth of the tumor from the skin surface and the top, bottom and side margins of the radiation "field," or area to receive radiation.

Once these margins were set, Row was "tattooed" with little "freckles" which outlined the area to be irradiated.

Computer Planning

Using these films, and additional information on the patient's condition and the characteristics of her specific tumor, the radiation physicist set the parameters of the treatment field with the dosimetrist who, assisted by a computer, determined exactly how much radiation was needed.

A treatment field usually does not receive the same amount of radiation throughout, so the computer may draw up to 20 alternative plans. A computer printout diagrams the distribution of radiation doses. The total radiation dose is generally divided into multiple doses — usually on a five-times-a-week basis — to allow time for normal tissues to recover. The dosimetrist also must calculate this "fractionation" or division of doses.

Electronics technicians can build lead blocks that are placed above the patient during treatment to prevent radiation from reaching particularly sensitive areas around the tumor, or they can devise filters and wedges to mold the radiation beams for irregularly shaped treatment fields.

Although advancements (see accompanying feature story) have made it a very precise, effective treatment method, radiation therapy — like surgery and chemotherapy — can be rigorous for the patient. In addition to the emotional trauma associated with a life-threatening disease, patients may experience physical side effects from the radiation. Depending on the site of the cancer and the therapy, they may experience fatigue, loss of taste or appetite, nausea, diarrhea, "dry" mouth and temporary hair loss.

Skin "burns", which used to be a common side effect of radiotherapy, rarely are seen with modern equipment, according to Dr. Chaffey. Patients often have heard something about radiation therapy and its side effects and have formed myths and misconceptions about both before undergoing treatment.

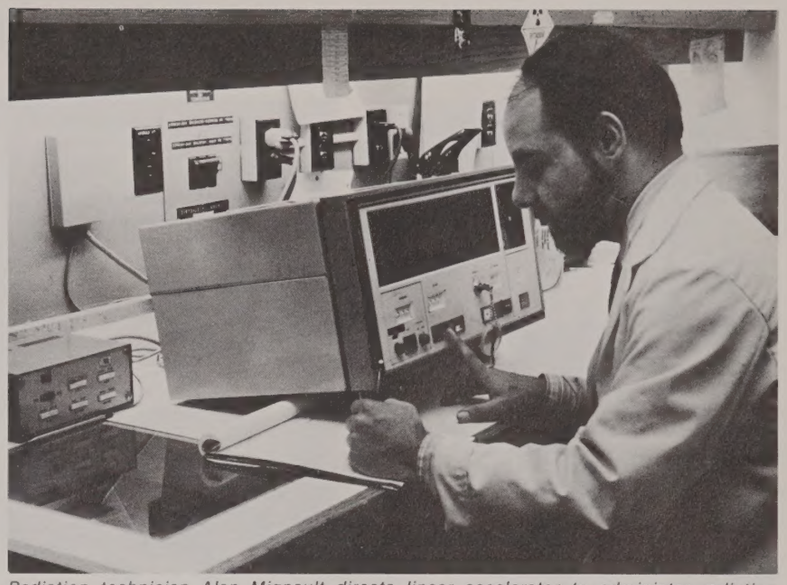
Mary Schade, RN, radiation therapy department.

Personalized treatment

On Mary Jane Row's first day of treatment, Schade again sat down with her and explained the treatment plan, the side effects she might experience and the preventive measures she could take to combat those effects.

"I had known other people who underwent radiation therapy and had serious burns," said Row. "I never knew anyone who had been successfully treated by radiation therapy, but I did read about how it could help. The most important thing," she emphasized, "was that the Deaconess staff helped alleviate my fears by answering all my questions about it. The worst thing is to be unpleasantly surprised."

According to Schade, a well-informed patient is likely to be more receptive to treatment. Many patients are relieved at the end of their first treatment," she added, "because they were well-informed and knew what to expect."



Radiation technician Alan Mignault directs linear accelerator to administer radiation therapy, as he observes the patient through a monitor (lower right).

Throughout her treatment, Row sought Schade's counsel. "Mary was concerned," said Row. "Any time I had a problem, I'd go to the desk and talk to Mary — I didn't always have to run to the doctor; Mary could refer me when that was necessary."

"We urge patients to go to the nurses for help, because they see their physicians once a week, although they receive treatments five-times-a-week," said Schade. "Patients can approach *any* nurse in the department — we work as a team," she added.

'We make sure patients get total care and not just radiation treatment'

Mary Schade, RN

After discussing Row's treatment with her, Schade escorted Row to the treatment area to meet the radiation technologists who described the practical aspects of the therapy and positioned her in the treatment room.

"I didn't want to talk to the technologists who were going to see my 'mutilated' body. I just wanted to do it and get out," said Row, "but Alan wouldn't stop talking to me."

"I make it my job to get patients to communicate with me," said radiation technologist Alan Mignault. "Every patient clicks with something you do or some interest you have," he pointed out.

"Alan wouldn't let me be 'down,' " agreed Row. "How long can you be miserable with people like that around?"

Although the patient is left alone in the treatment room, monitoring and microphone systems enable the technologists to keep close visual and audio contact with them, and technologists are just around the corner.

"We emphasize the television and microphone systems that connect us with the patients," said Sarah Fitzgerald, supervisor of the NEDH technologists, "and we reassure them that there are no invasive procedures, no needles or blood work, for example."

"Everything about the department is keyed to keeping the patient away from stress," Row observed. "Even the design of the place expresses that, from its colorful walls to amenities like lockers in the changing rooms" (where patients change from street clothes into hospital gowns before going to the treatment waiting room).

The waiting room in radiation therapy is separate from the other JCRT areas. The chairs are placed closely together, a proximity which often fosters a communal atmosphere among patients.

"Patients began to counsel each other," remembered Row. "We talked about things other than cancer. People with cancer are removed from the normal world — your life is changed because you are committed to fighting your disease; and that interrupts your normalcy, she said." By sitting out there in that little room, we became connected. "We were saying 'we are normal.' "

After nine weeks, Row's radiation treatments at the Deaconess were over, but she had mixed feelings about leaving.

"Everyone here at the Deaconess gives you hope," she explained. "They constantly help make you feel that this is not a lasting situation."

Residents and fellows who are part

HYPERALIMENTATION FELLOWS: *(l-r) Drs. Farhat Homsy, Mancy University, France; George Carle, Aberdeen University, Scotland; William Abbott, University of Pittsburg School of Medicine.*

RADIATION THERAPY RESIDENTS: *(l-r) Drs. Joseph Schneider (1st yr.), University of Alabama School of Medicine; David Larson (1st yr.), University of Miami School of Medicine; Roger Anderson (1st yr.), Duke University School of Medicine; Mark Brenner (1st yr.), Tufts University School of Medicine.*

DIAGNOSTIC RADIATION THERAPY RESIDENTS AND FELLOWS: *(front row, l-r) Drs. Clement Grassi (2nd yr. resident), Tufts University School of Medicine; Elizabeth Dienes (2nd yr. resident), Tufts University School of Medicine; Maureen Clarke (1st yr. fellow), State University of New York, Downstate Medical Center; (back row, l-r) Drs. Robert G. Lee (1st yr. fellow), University of Massachusetts Medical School; David Mikulis (2nd yr. resident), Tufts University School of Medicine; Richard Jacobs (1st yr. fellow), University of Massachusetts Medical School.*

GENERAL SURGERY RESIDENTS: *(front row, l-r) Drs. John Thayer (3rd yr.), Brown University Program in Medicine; Ira Fox (4th yr.), Columbia University College of Physicians and Surgeons; Coleen Ryan (1st yr.), Georgetown University School of Medicine; John Ganssle (1st yr.), Johns Hopkins University School of Medicine; William Durkin (3rd yr.), Georgetown University School of Medicine; James Paskert (2nd yr.), Jefferson Medical College; Anthony Joseph (1st yr.), Oxford/Cambridge University, England; (back row, l-r) Drs. Charles Hergrueter (2nd yr.), Harvard Medical School; Carol Williams (chief), University of Connecticut School of Medicine; John Waciuma (chief), Albert Einstein College of Medicine of Yeshiva University; Steven Brourman (2nd yr.), University of California School of Medicine; John McAuliffe (1st yr.), St. Louis University School of Medicine; (not shown) Dr. Bruce Topol (3rd yr.), Northwestern University Medical School.*

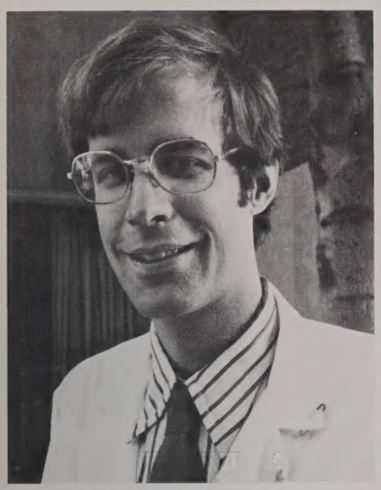
ANATOMIC PATHOLOGY RESIDENTS: *(front row, l-r) Drs. Lillian W. Gaber (3rd yr.), Ain Shams University School of Medicine; Carolyn Mies (3rd yr.), Rush Medical College of Rush University; Barbara C. Wolf (3rd yr.), Boston University School of Medicine; Jorge D. Reyes (1st yr.), Federal University School of Medicine, Belo Horizonte, Brazil; (back row, l-r) M.T. O'Murchadha (4th yr.), National University of Ireland; Leonid Z. Pevzner (1st yr.), Pavlov Medical School, Leningrad; Betty Ann Brody (3rd yr.), University of Pennsylvania School of Medicine; Achyut K. Bhattacharyya (2nd yr.), Calcutta University; Douglas W.K. Tom (5th yr.), University of Hawaii John A. Burns School of Medicine; (not shown) L. Jeffrey Medeiras (3rd yr.), University of Massachusetts Medical School; William D. Travis (2nd yr.), University of Florida Medical School.*

DEPARTMENT OF MEDICINE SECOND YEAR RESIDENTS: *(front row, l-r) Drs. Joseph Rothchild, Frank L. Anderson, Malcolm D. Rosenson, Stuart W. Zarich, William A. Jensen (chief resident), Robert C. Moellering Jr. (chairman, department of medicine), Jonathan R. Diamond (chief resident), Heidi Lisker, Christine D. Emery; (back row, l-r) Raymond F. Regan, Bruce M. Becker, Peter G. Spitzer, Craig C. Berry, Virginia T. Latham, Bryan R. Prentice, Jon W. Cronin, Margaret E. Helming, Gary L. Weeks, Laurie P. Hammer, Mary A. Albrecht; (not shown) Drs. Harlan Gibbs, Richard M. Lubens, Barry D. Rinker.*

DEPARTMENT OF MEDICINE FIRST YEAR RESIDENTS: *(1st row, l-r) Drs. George J. Clairmont, Dominic J. Nompleggi, Jack D. Ohringer, Edward S. Thomas, William A. Jensen (chief resident), Robert C. Moellering Jr. (chairman, department of medicine), Jonathan R. Diamond (chief resident), Charles E. Cook, Marian F. Griffiths, Steven W. Breecker, Edward C. Federman, Malcolm S. Thaler; (2nd row, l-r) Drs. Margaret M. Coyle, Thomas A. Russo, Joanne M.S. Davies, Glen J. Kowalchuk, Gregory S. Rihacek, Mary M. O'Donoghue, Jeffrey L. Noebels, Steven E. Lane, David R. Stone, Brian Wispelwey, Susan F. Kroop, I. Deborah Dauphinais; (3rd row, l-r) Drs. Paul E. Kile, Debra H. Kile, David A. Malins, Bruce Minsky, Kevin G. Kett, Joseph L. Potz, Gary E. Oppenheim.*

CLINICAL PATHOLOGY RESIDENTS: *(front row, l-r) Drs. Zsolt B. Argenyl (3rd yr.), Semmelweis Medical University of Budapest, Hungary; Patrick J. Dean (4th yr.), Georgetown University School of Medicine; Robert Salomon (4th yr.), University of Massachusetts School of Medicine; (back row, l-r) Drs. Jean C. Dunn (4th yr.), Jefferson Medical College; Mary A. Mooney (4th yr.), Ohio State University College of Medicine; (not shown) Steven Tahan (3rd yr.), Yale University of Medicine.*

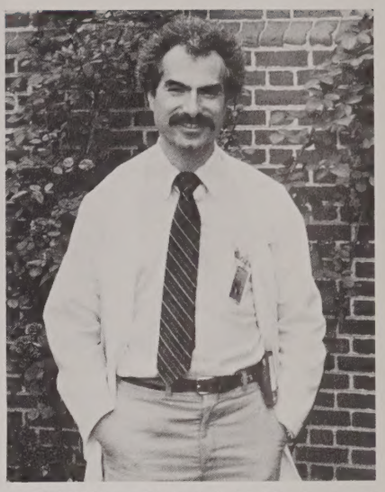
of the Deaconess community this year



HEMATOLOGY-ONCOLOGY FELLOW: *Dr. Harry Matelski (2nd yr.), Hahnemann Medical College.*

PODIATRY RESIDENTS: *(l-r) David Agoada, DPM (2nd yr.), Pennsylvania College of Podiatric Medicine; Daniel Riley, DPM (1st yr.), New York College of Podiatric Medicine.*

HEMATOLOGY FELLOW: *Dr. Elaine M. Sloand (1st yr.), University of Rochester School of Medicine and Dentistry.*



GASTROENTEROLOGY FELLOW: *Dr. David M. Sack (2nd yr.) John Hopkins University School of Medicine.*

PULMONARY AND INFECTIOUS DISEASE FELLOWS: *(l-r) Drs. J. Daniel Grigas, pulmonary disease (2nd yr.), University of Florida College of Medicine; Jennifer S. Daly, infectious disease (1st yr.), Columbia University College of Physicians and Surgeons.*

JOSLIN DIABETES FELLOWS: *(front row, l-r) Drs. Margo Hudson, (1st yr.), Tufts University School of Medicine; Peter Wyman (2nd yr.), University of Massachusetts Medical School; Constance Stewart (1st yr.), Medical College of Pennsylvania; Arlene Olaisen (1st yr.), State University of New York; (back row, l-r) Drs. Dwight Shen (2nd yr.), Boston University School of Medicine; Brian Berelowitz (1st yr.), University of Cape Town, Cape Town, South Africa; Eric Lewis (1st yr.), University of Michigan Medical School; Thomas Gaeckle (1st yr.), University of South Dakota School of Medicine; (not shown) Drs. John Sheehan (1st yr.), University of Dublin, Trinity College; Barry Wayler (2nd yr.), Vanderbilt University School of Medicine.*

THORACIC AND CARDIOVASCULAR SURGERY RESIDENTS: *(l-r) Drs. Marshall Kramer (chief), New York Medical College; Maurice Richardson (3rd yr., general surgery), Columbia University College of Physicians and Surgeons; Eric Gluck (2nd yr., general surgery), CMDNJ, New Jersey Medical School; Martin Milgrom (4th yr., general surgery), Columbia University College of Physicians and Surgeons; William Parks (1st yr., thoracic surgery), University of Louisville School of Medicine.*

ALLERGY FELLOWS: *(l-r) Drs. Lawrence DuBuske (2nd yr.), Northwestern University Medical School; Chong W. Lee (3rd yr.), New York University School of Medicine.*

DEPARTMENT OF MEDICINE THIRD YEAR RESIDENTS: *(front row, l-r) Drs. Michael P. Savage, Joseph C. Lei, William A. Jensen (chief resident), Robert C. Moellering Jr. (chairman, department of medicine), Jonathan R. Diamond (chief resident), Michael G. Estridge, Richard F. Horan, Kathleen A. Eagen, Robert H. Brew; (back row, l-r) Drs. Mark P. Lebeis, Thomas S. Wilson, Michael W. Schuster, John J. Pippin, Barbara A. DeBuono, Ferdinand F. Anderson, Aldo R. Esposito, Joanne K. Zawadzki; (not shown) Gregory Kenien, Dean F. Markham, Margaret L. McLaughlin, Brenda C. Minor, Monique Peacocke.*

CARDIOLOGY FELLOWS: *(front row, l-r) Drs. Nissim Abecasis (lst yr.), University of Caracas, Venezuela; Andrij O. Baran (2nd yr.), Georgetown University School of Medicine; Mario E. Motta (2nd yr.), Tufts University School of Medicine; (back row, l-r) Drs. Philip Fitzpatrick (1st yr.), Georgetown University School of Medicine; Kenneth Adams (1st yr.), Cornell University Medical College; (not shown) Drs. H. Manning Curtis (2nd yr.), Tulane University School of Medicine; Johnathan Albin (2nd yr), New York University School of Medicine.*

JCRT *(continued from page 6)*

"Dynamic Treatment"

A third major focus at JCRT has been the implementation of "dynamic treatment," or computer-controlled radiation therapy. In 1980, after several years of research and development with the Massachusetts Institute of Technology and Harvard, the Deaconess unit of JCRT was the first radiotherapy installation in the world to use fully computer-controlled radiation therapy.

The computer system enables physicians to shape the pattern of x-ray beams exactly to the desired tumor volume while avoiding, as much as possible, the irradiation of normal cells. The accelerator moves around the patient, or the patient may be passed simultaneously through the beam, all by computer control. This approach allows dose distributions which can treat tumors and portions of the body difficult or impossible to irradiate with traditional therapy.

"With dynamic treatment, we have been able to create therapy plans and direct the accelerator to deliver the desired doses in a three-dimensional volume," said Dr. Chaffey. "In the old days," he noted, "the surface of the body received most of the radiation from the machines. Then when higher energy machines became available we found we could direct the beams to maximize radiation within a central treatment volume. CT scans (computerized axial tomography) or x-rays used for examining soft tissues by means of a computer that produces cross-sectional images) helped us better define the tumor volume within the body. Now we can use multiple beam directions and even treat irregularly shaped treatment volumes," Dr. Chaffey explained.

Intraoperative Radiotherapy

Another unique program at the Deaconess utilizes an orthovoltage x-ray machine located in an operating room which allows radiation to be administered to a patient during surgery.

NEDH is the only hospital in the United States with an operating room specially designed to deliver this type of treatment, so that patients do not have to be moved from an operating room to receive radiotherapy during surgery. Intraoperative radiotherapy (IORT) is used with an overall treatment plan that may include external radiotherapy before or after surgery.

For example, a surgical patient who is having an abdominal tumor removed, can have radiation treatment directly to the exposed tumor area (not through the skin). Certain organs surrounding the stomach are extremely sensitive to radiation, which makes treatment difficult because they could be damaged in traditional radiotherapy. With IORT, however, organs can be pushed aside during surgery, enabling radiotherapists to increase the radiation dosage, while sparing normal tissue, thus minimizing potentially harmful effects on the patient.

NEDH radiotherapists hope that by giving higher direct doses, IORT will reduce the overall number of radiation treatments a patient will need.

Dr. Tyvin Rich, NEDH radiotherapist who heads this program, emphasizes that the interdisciplinary nature of the project has led to closer cooperation and greater understanding between surgeons and radiation therapists.

Careful, clinical study of IORT will continue at the Deaconess in an effort to maximize and expand the effectiveness and the benefits of this exciting, efficient new treatment method.

News in Brief

The NEDH was well-represented by Cancer Research Institute (CRI) staff at the Ninth International Congress of the transplantation Society held August 23-27 in Brighton, England. **Dr. Anthony P. Monaco,** CRI scientific director, chaired the session on experimental immunosuppression (which reduces the body's resistance to foreign substances in hopes of preventing organ transplant rejection) and the plenary session on recent advances in immunosuppression for clinical use.

Mary Wood, immunology research associate and an officer of the society's board of trustees, chaired the session on suppressor cells (cells that reduce the immune reaction) and presented a paper concerning mechanisms for prolonging skin grafts in mice.

Dr. Takashi-Maki, CRI associate member, presented a paper on the effect of blood transfusions on recipient's acceptance of a transplanted organ. **Mary Ann Simpson,** immunology fellow, also presented a paper on characterizing suppressor cells that are induced after mice receive antilymphocyte serum (an immunosuppressive drug).

Suzanne D. Holloran, RN, coordinator of nursing staff education, received an honorable mention from the American Journal of Nursing Company's Education Service Division Media Festival for the NEDH-produced slidetape program, "May Day — A Review of Critical Events."

The slidetape program was one of only two hospital-produced audio-visuals shown at the American Nursing Association Convention in Washington, DC in June. It is used in the two-hour cardiopulmonary resuscitation (CPR) review for nurses conducted twice a year at the Deaconess.

The program was produced by Holloran and scripted by **Ellen Leary, RN,** cardiac clinical nurse specialist, and **Mira McDonald, RN,** staff educator. **Ernie Cakounes,** multimedia specialist for the School of Nursing, produced the show's photography, and Deaconess unit teachers provided the acting talent.

Director of dietetics, **Joyce Tower, RD,** has been appointed to the American Dietetic Association's newly formed task force on education, which will examine the role of education within the dietetics profession and the association, and make recommendations to the organization's board of directors.

Carol Garant, RN, MSN, clinical specialist in psychiatry, contributed a chapter entitled "Process of Effecting Change in Nursing" to Edwina McConnell's new book, *Burnout in the Nursing Profession.* The book is published by the CV Mosby Company.

In July, Garant conducted a workshop on "Games Your Nursing School Never Taught You" at the Nursing East 1982 Conference sponsored by the Pennsylvania Nurses Association in Lancaster, Pennsylvania.

Reverend Guy Steele, director of the pastoral care department, spoke on "Religion and Healing" at Saint Savior's Priory in London this August. While in London, Reverend Steele was the guest of the director of the Marie Stopes House, which is the headquarters for this worldwide organization concerned with family planning and population control.

Nursing staff education instructor **Barbara H. Mishkin, RN,** coordinator of nursing staff education, **Suzanne D. Holloran, RN,** and **Suzanne Burge, RN,** former NEDH cardiovascular clinical nurse specialist, coauthored a paper entitled "Simulated Cardiopulmonary Arrests in a Hospital Setting," which was published in the July-August 1982 issue of *Nurse Educator.*

Margaret A. Burns, RN, director of surgical services, was honored recently for her contributions to the nursing profession by the alumnae association of the Union Hospital School of Nursing in Fall River, Massachusetts.

At the Deaconess, individualized care goes hand-in-hand with technology
(see page 1)

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